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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,472	03/24/2004	Osamu Nakamura	740756-2722	2927

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EXAMINER

DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/807,472	Applicant(s) NAKAMURA, OSAMU	
	Examiner Rakesh K. Dhingra	Art Unit 1763	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Figure 5B – Reference number 513 is not shown in the drawing as mentioned on page 8, line 19 of the disclosure.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1763

**Claims 1,13 are rejected under 35 U.S.C. 102(e) as being anticipated by Babko-Malyi (US PGPub. No. 2003/0106788).**

Regarding Claim 1: Babko-Malyi teaches an atmospheric plasma apparatus (Figures 1-6) comprising:

a plasma generation unit (Figures 1a,1b,2) comprising a receiving (first) electrode 16 and a plurality of (segmented electrode) second electrodes 12 opposed to the first electrode; and

a gas supply unit (not shown) for introducing a process gas into a space 19 between the first electrode and the plurality of second electrodes (Paragraphs 0027 –0029), wherein the plurality of plasma generation units are arranged linearly in one line or a plurality of lines (Figure 2, Paragraph 0030).

Babko-Malyi also teaches other embodiments (Figures 5a, 6b) of the invention that have plurality of plasma discharge devices (units) 505 [Paragraphs 0034-0039].

Babko-Malyi further teaches that the segmented electrode (second electrode) 12 can have different shapes/configurations as required (Paragraph 0027).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 2-6, 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babko-Malyi (PGPub. No. 2003/0106788)**

Art Unit: 1763

**Regarding Claims 2-4:** Babko-Malyi teaches an atmospheric plasma apparatus

(Figures 1-6) comprising:

a plasma generation unit (Figures 1a, 1b, 2) comprising a receiving (first) electrode 16 and a plurality of (segmented electrode) second electrodes 12 opposed to the first electrode; and

a gas supply unit (not shown) for introducing a process gas into a space 19 between the first electrode and the plurality of second electrodes (Paragraphs 0027 –0029), wherein the plurality of plasma generation units are arranged linearly in one line or a plurality of lines (Figure 2, Paragraph 0030).

Babko-Malyi also teaches other embodiments (Figures 5a, 6b) of the invention that have plurality of plasma discharge devices (units) 505 [Paragraphs 0034-0039].

Babko-Malyi does not teach specific dimensions of second electrode but discloses that the segmented electrode (second electrode) 12 can have different shape/configuration as required (Paragraph 0027).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to select dimensions of second electrode as per requirement in the apparatus of Babko-Malyi to enable high electric field concentration (Paragraph 0027).

In this connection courts have ruled (Case law):

”It was held in *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that the shape was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape was significant. (Also see MPEP 2144.04(d)).”

Regarding Claims 5, 6: Babko-Malyi teaches that the apparatus (Figures 5a, 5b) has provision for moving plasma discharge unit 505 with respect to receiving electrode

(substrate) 515 [Paragraphs 0035, 0036].

Regarding Claims 14,15: Babko-Malyi teaches that receiving electrode 16 is covered with dielectric 15. Babko-Malyi also teaches that primary dielectric plate 11 surrounds the segmented electrode 12 (Paragraphs 0027, 0028).

**Claims 7-9, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babko-Malyi (PGPub. No. 2003/0106788) in view of Suzuki et al (US PGPub. No. 2002/0064597).**

Regarding Claims 7-9, 16-18: Babko-Malyi teaches all limitations of the claims except voltage control circuit.

Suzuki et al teach an atmospheric pressure plasma apparatus (Figure 1) that has a high voltage power supply 22 and a control device (not shown in Figure) that controls the voltage applied between the electrodes 14, 16 depending upon process conditions like type and size of substrate materials to be processed and that the control device can pulse the supplied voltage. Suzuki et al also teach that plural plasma generating devices are also within the scope of his invention. Suzuki et al further teach that the control device can also control the timing and duration of application of voltage pulses (Paragraphs 0048, 0092).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use control device as taught by Suzuki et al in the apparatus of Babko-Malyi to enable precise control of irradiation time of plasma (Paragraph 0048).

Art Unit: 1763

**Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babko-Malyi (PGPub. No. 2003/0106788) in view of Seki et al (US Patent No. 6,538,387).**

Regarding Claims 10-12: Babko-Malyi teaches all limitations of the claims except second electrodes processed by photolithography, ion beam etc.

Seki et al teach a plasma apparatus (Figure 1, 5) that uses a substrate 5 on which electrodes 1-4 are formed using dry etching (includes photolithography techniques).

Seki et al also teach that such apparatus can be used to form and pattern thin films and elements like TFT (Thin Film Transistors) [Column 2, line 65 to Column 3, line 67].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use second electrode made by photolithography as taught by Seki et al in the apparatus of Babko-Malyi to enable formation of functional thin films at plurality of tiny regions anywhere on a substrate (Column 5, lines 15-27).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

**Schaepkens (US PGPub. No. 2004/0115402)** teach a plasma apparatus 100 (Figures 1A) that uses an array 110 of plurality of plasma sources 112 that scans and coats a substrate 130 with coating 132 using reactant gas supplied from injector 140.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

Art Unit: 1763

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



Parviz Hassanzadeh  
Supervisory Patent Examiner  
Art Unit 1763